

Tech Talk from HVI: Circuit & Feature Explanations



Subject: Load Burn Mode

This feature is normally associated with AC hipots when used to perform over voltage AC Withstand testing on certain types of apparatus. If a defect within the load cannot hold the test voltage, it will fail. The fault has to be found to be repaired or replaced. In a transformer or generator coil, for example, that has dozens of layers of windings, the fault may be deeply buried and not apparent from the outside. **How do you find it?**

Burn it! If there is a fault in a winding or some other load, **sometimes it has to “burned” to find it.** Under normal operation, most hipots will overload, or “trip” off when an arc occurs on the output. This indicates that a failure has occurred and protects the load from further damage by the removal of the high voltage and the resultant current draw through the load. However, in some cases it is desirable to allow the high voltage to remain on to sustain the arc for the purpose of **“burning”** the defect to make it worse. This is done to make the location of the fault more obvious and easier to find.

On the panel of the hipot there will be a toggle switch labeled **BURN** to activate this feature. When a fault, or arc, occurs in the load under test, the BURN feature will limit the output current to below the rated maximum of the hipot to keep it from overloading and switching off. This will sustain the arc to permit the voltage and current to continue through the fault **to cause more severe damage and obvious marking of the fault area.** (When the arc occurs, the hipot output voltage will lower as the arc impedance is reduced.) After a short time, possibly the arc noise can be heard and smoke may be visible, both helping one to find the fault location. Or, the fault area may be intentionally burned to scar the area to more easily locate the defect when the object is inspected, like when the layers of a transformer winding are peeled away.

The Burn Mode feature within an AC hipot is usually an option and must be ordered when the instrument.



Panel close-up of **BURN** feature